In the Claims:

1. (Cancelled) A device for measuring the movement of an object comprising:

a. means for creating time-varying magnetic fields at least large enough to surround the object;

b. electrical circuits adapted to conform to the surface of the object; and

c. voltage monitoring means connected to the electrical circuits, whereby motion of the surface creates a measurable change in induced voltage in the circuits that correlates to the movement of the object.

2. (Cancelled) The device of claim 1 in which the voltage monitoring means is connected to a computing means suitable for performing a series of algorithmic steps to calculate the volume change of the object from the measured induced voltage.

3. (Cancelled) The device of claim 1 in which the electrical circuits are adapted to conform to one or more portions of a human body.

4. (Currently Amended) The device of claim ~~1~~ 37 in which the current generating means generates current with a frequency range of about 10 kHz to about 200 kHz and from about 1 milliampere to about 1 ampere.

5. (Currently Amended) The device of claim ~~1~~ 37 in which the conductive coil means comprises a plurality of coil loops which are configured tightly about the thoracic region and the abdominal region of the mammal.

6. (Currently Amended) The device of claim ~~1~~ 37 further comprising sensing and control means for controlling operation of the device, the sensing and control means being electrically connected to the conductive coil means, the fixed coil means, and the current generating means.

7. (Previously Presented) The device of claim 6 in which the sensing and control means comprises timing and multiplex switching means for providing simultaneous volume measurements of both a thoracic region and an abdominal region of the mammal.

8. (Previously Presented) The device of claim 7 in which the sensing and control means comprises multiplexing means for providing simultaneous measurement of a plurality of regions of the mammal utilizing either phase, frequency or time multiplexing.

9. (Cancelled)

10. (Cancelled)

11. (Currently Amended) The device of claim ~~1 in which the~~ 37, further including a sensing and control means comprisesing an amplifier and a rectifier electrically connected to the coil means that is receiving the induced voltage from the other coil means.

12. (Currently Amended) A device for measuring the movement of an object, comprising:

a. means for creating time-varying magnetic fields at least large enough to surround the object, ~~The device of claim 2 in which~~ wherein the conductive coil means are electrically connected in series so that the instantaneous volume V may be calculated from the voltage reading U of the volume output signal in the coil means which is receiving the induced voltage by use of the formula

$$V = U \cdot d \cdot k_c$$

wherein d is the spacing between the coils;

and $k_c = a_c / U_c$;

wherein a_c is the area of a reference coil, and U_c is the voltage reading of the volume signal when a calibration coil is attached[[.]];

b. electrical circuits adapted to conform to the surface of the object; and

c. voltage monitoring means connected to the electrical circuits, whereby motion of the surface creates a measurable change in induced voltage in the circuits that correlates to the movement of the object, wherein the voltage monitoring means is connected to a computing means suitable for performing a series of algorithmic steps to calculate the volume change of the object from the measured induced voltage.

13. (Currently Amended) The device of claim [[1]] 37 in which the fixed coil means comprises a plurality of small coil elements that are configured for matching and positioning to permit the fixed coil means to generate a homogeneous magnetic field similar to a single large

coil for either sensing an induced voltage from the conductive coil means or for generating a field to create an induced voltage in the conductive coil means.

14. (Previously Presented) The device of claim 13 in which the plurality of small coil elements comprises three small coil elements.

15. (Previously Presented) The device of claim 14 in which each of the small coil elements is wound on a ferrite core and arranged linearly with optimized positions and signal intensity weighting to generate a homogeneous magnetic field at the portion of the mammal being measured.

16. (Currently Amended) The device of claim [[1]] 37 in which the conductive coil means comprises electrically conductive coil loops that are equally spaced and carried by an elastic and conformable substrate that is suitable for wearing by the mammal in a manner similar to a tightly fitting garment which is configured so that the coil loops always conform to the same surface of the portion of the mammal regardless of any shape change which that portion of the mammal may experience during respiration.

17. (Currently Amended) The device of claim [[1]] 37 in which the conductive coil means comprises electrically conductive coil loops that are spaced at constant and known intervals and which are carried by an elastic and conformable substrate that is suitable for wearing by the mammal in a manner similar to a tightly fitting garment which is configured so that the coil

loops always conform to the same surface of the portion of the mammal regardless of any shape change which that portion of the mammal may experience during respiration.

18. (Currently Amended) The device of claim [[1]] 37 further comprising computational means for receiving a signal representative of sensed volume of the portion of the mammal and for converting the signal to true volume values.

19. (Currently Amended) A device for measuring the changing area within at least one portion of a mammal due to cardiac function, comprising:

a. conductive coil means configured tightly about the various circumferences of at least one portion of the mammal, wherein the conductive coil means comprises electrically conductive coil loops that are equally spaced on a flexible substrate that is suitable for wearing by the mammal, and further wherein said conductive coil loops being connected in series so that a single voltage is measured, whereby measurement system complexity is substantially reduced;

b. fixed coil means remotely located relative to the conductive coil means about the mammal; and,

c. current generating means for selectively providing alternating current to either one of the conductive coil means or the fixed coil means to create an induced voltage in the other coil means representative of true area within the coil means that is configured tightly about the various circumferences of the mammal portion or portions, with the signals and area changing over time due to the cardiac function of the mammal.

20. (Cancelled) The device of claim 19 in which the conductive coil means comprises electrically conductive coil loops that are equally spaced on a flexible substrate that is suitable for wearing by the mammal.

21. (Previously Presented) The device of claim 19 in which the conductive coil means comprises electrically conductive coil loops that are closed circumferential loops.

22. (Previously Presented) The device of claim 19 in which the current generating means generates current with a frequency range of about 10 kHz to about 200 kHz and from about 1 milliampere to about 1 ampere.

23. (Previously Presented) The device of claim 19 in which the conductive coil means comprises a plurality of coil loops which are configured tightly about the thoracic region and the abdominal region of the mammal.

24. (Previously Presented) The device of claim 19 further comprising sensing and control means for controlling operation of the device, the sensing and control means being electrically connected to the conductive coil means, the fixed coil means, and the current generating means.

25. (Previously Presented) The device of claim 24 in which the sensing and control means comprises timing and multiplex switching means for providing simultaneous area measurements of both a thoracic region and an abdominal region of the mammal.

26. (Previously Presented) The device of claim 25 in which the sensing and control means comprises multiplexing means for providing simultaneous measurement of a plurality of regions of the mammal utilizing either phase, frequency or time multiplexing.

27. (Previously Presented) The device of claim 19 in which the current generating means comprises a constant current circuit to maintain the current in the conductive coil means constant regardless of the dynamic variations of portions of the conductive coil means that are configured tightly about the various circumferences of at least one portion of the mammal.

28. (Previously Presented) The device of claim 19 in which the current generating means comprises a signal generator and a constant current amplifier electrically connected to the coil means which is receiving the generated current.

29. (Previously Presented) The device of claim 19 in which the sensing and control means comprises an amplifier and a rectifier electrically connected to the coil means that is receiving the induced voltage from the other coil means.

30. (Currently Amended) A device for measuring the changing area within at least one portion of a mammal due to cardiac function, comprising:

a. conductive coil means configured tightly about the various circumferences of at least one portion of the mammal, wherein the conductive coil means comprises electrically conductive coil loops that are equally spaced on a flexible substrate that is suitable for wearing by the mammal, ~~The device of claim 20 in which~~ wherein the

conductive coil means are electrically connected in series so that the area A may be calculated from the measured voltage U of a single coil loop which is receiving the induced voltage by use of the formula

$$A=U \bullet k$$

wherein $k_c = a_c / U_c$; and

wherein a_c is the area of a reference coil, and U_c is the voltage reading of the volume signal when a calibration coil is attached[[.]];

b. fixed coil means remotely located relative to the conductive coil means about the mammal; and,

c. current generating means for selectively providing alternating current to either one of the conductive coil means or the fixed coil means to create an induced voltage in the other coil means representative of true area within the coil means that is configured tightly about the various circumferences of the mammal portion or portions, with the signals and area changing over time due to the cardiac function of the mammal.

31. (Previously Presented) The device of claim 19 in which the fixed coil means comprises a plurality of small coil elements that are configured for matching and positioning to permit the fixed coil means to generate a magnetic field similar to a single large coil for either sensing an induced voltage from the conductive coil means or for generating a field to create an induced voltage in the conductive coil means.

32. (Previously Presented) The device of claim 31 in which the plurality of small coil elements comprises three small coil elements.

33. (Previously Presented) The device of claim 32 in which each of the small coil elements is wound on a ferrite core and arranged linearly with optimized positions and signal intensity weighting to generate a homogeneous magnetic field at the portion of the mammal being measured.

34. (Previously Presented) The device of claim 19 in which the conductive coil means comprises electrically conductive coil loops that are equally spaced and carried by an elastic and conformable substrate that is suitable for wearing by the mammal in a manner similar to a tightly fitting garment which is configured so that the coil loops always conform to the same surface of the portion of the mammal regardless of any shape change which that portion of the mammal may experience during cardiac function.

35. (Previously Presented) The device of claim 19 in which the conductive coil means comprises electrically conductive coil loops that are spaced at constant and known intervals and which are carried by an elastic and conformable substrate that is suitable for wearing by the mammal in a manner similar to a tightly fitting garment which is configured so that the coil loops always conform to the same surface of the portion of the mammal regardless of any shape change which that portion of the mammal may experience during cardiac function.

36. (Previously Presented) The device of claim 19 further comprising computational means for receiving a signal representative of sensed area of the portion of the mammal and for converting the signal to true area values.

Please add new claims 37-53 as follows:

37. (New) A device for measuring the changing area within at least one portion of a mammal due to cardiac function, comprising:

a. conductive coil means configured tightly about the various circumferences of at least one portion of the mammal;

b. fixed coil means remotely located relative to the conductive coil means about the mammal; and,

c. current generating means for selectively providing constant alternating current to either one of the conductive coil means or the fixed coil means to create an induced voltage in the other coil means representative of true area within the coil means that is configured tightly about the various circumferences of the mammal portion or portions, with the signals and area changing over time due to the cardiac function of the mammal, said constant current substantially increasing the accuracy of said measurement system.

38. (New) The device of claim 12 in which the conductive coil means comprises a plurality of coil loops which are configured tightly about the thoracic region and the abdominal region of the mammal.

39. (New) The device of claim 12 further comprising sensing and control means for controlling operation of the device, the sensing and control means being electrically connected to the conductive coil means, the fixed coil means, and the current generating means.

40. (New) The device of claim 39 in which the sensing and control means comprises timing and multiplex switching means for providing simultaneous volume measurements of both a thoracic region and an abdominal region of the mammal.

41. (New) The device of claim 40 in which the sensing and control means comprises multiplexing means for providing simultaneous measurement of a plurality of regions of the mammal utilizing either phase, frequency or time multiplexing.

42. (New) The device of claim 12 in which the current generating means comprises a constant current circuit to maintain the current in the conductive coil means constant regardless of the dynamic variations of portions of the conductive coil means that are configured tightly about the various circumferences of at least one portion of the mammal.

43. (New) The device of claim 12 in which the current generating means comprises a signal generator and a constant current amplifier electrically connected to the coil means which is receiving the generated current.

44. (New) The device of claim 12 in which the sensing and control means comprises an amplifier and a rectifier electrically connected to the coil means that is receiving the induced voltage from the other coil means.

45. (New) The device of claim 30 in which the conductive coil means comprises a plurality of coil loops which are configured tightly about the thoracic region and the abdominal region of the mammal.

46. (New) The device of claim 30 further comprising sensing and control means for controlling operation of the device, the sensing and control means being electrically connected to the conductive coil means, the fixed coil means, and the current generating means.

47. (New) The device of claim 46 in which the sensing and control means comprises timing and multiplex switching means for providing simultaneous volume measurements of both a thoracic region and an abdominal region of the mammal.

48. (New) The device of claim 47 in which the sensing and control means comprises multiplexing means for providing simultaneous measurement of a plurality of regions of the mammal utilizing either phase, frequency or time multiplexing.

49. (New) The device of claim 30 in which the current generating means comprises a constant current circuit to maintain the current in the conductive coil means constant regardless of the dynamic variations of portions of the conductive coil means that are configured tightly about the various circumferences of at least one portion of the mammal.

50. (New) The device of claim 30 in which the current generating means comprises a signal generator and a constant current amplifier electrically connected to the coil means which is receiving the generated current.

51. (New) The device of claim 30 in which the sensing and control means comprises an amplifier and a rectifier electrically connected to the coil means that is receiving the induced voltage from the other coil means.

52. (New) A device for measuring the changing area within at least one portion of a mammal due to cardiac function, comprising:

a. conductive coil means configured tightly about the various circumferences of at least one portion of the mammal, wherein the conductive coil means are electrically connected in series so that the instantaneous volume V may be calculated from the voltage reading U of the volume output signal in the coil means which is receiving the induced voltage by use of the formula

$V = U \bullet d \bullet k_c$

wherein d is the spacing between the coils;

and $k_c = a_c / U_c$;

wherein a_c is the area of a reference coil, and U_c is the voltage reading of the volume signal when a calibration coil is attached;

b. fixed coil means remotely located relative to the conductive coil means about the mammal; and

c. current generating means for selectively providing alternating current to either one of the conductive coil means or the fixed coil means to create an induced voltage in the other coil means representative of true area within the coil means that is configured tightly about the various circumferences of the mammal portion or portions, with the signals and area changing over time due to the cardiac function of the mammal.

53. (New) A device for measuring the changing area within at least one portion of a mammal due to cardiac function, comprising:

a. conductive coil means configured tightly about the various circumferences of at least one portion of the mammal, where in the conductive coil means comprises electrically conductive coil loops that are equally spaced on a flexible substrate that is suitable for wearing by the mammal, wherein the conductive coil means are electrically connected in series so that the area A may be calculated from the measured voltage U of a single coil loop which is receiving the induced voltage by use of the formula

$A = U \cdot k$

wherein $k_c = a_c / U_c$; and

wherein a_c is the area of a reference coil, and U_c is the voltage reading of the volume signal when a calibration coil is attached;

b. fixed coil means remotely located relative to the conductive coil means about the mammal; and

c. current generating means for selectively providing constant alternating current to either one of the conductive coil means or the fixed coil means to create an induced voltage in the other coil means representative of true area within the coil means

that is configured tightly about the various circumferences of the mammal portion or portions, with the signals and area changing over time due to the cardiac function of the mammal, said constant current substantially increasing the accuracy of said measurement system.